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Checking Mountain Soil Moisture Under the Snow, an important factor in snowmelt runoff.

Federal-State Cooperative

Snow Surveys and Water Supply Forecasts SERIAL RECORD

MAR 7 1956

U. S. DEPARTMENT OF AGRICULTURE

ARIZONA

SOIL CONSERVATION SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

Data included in this report were obtained by the agency named above in cooperation with the Federal, State and local organizations listed on the last page of this report.

AS OF_____ FEB. 15, 1956

UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY AND WATER SUPPLY FORECAST REPORTS:

Snow surveys in the West are conducted each year at more than 1200 snow courses. Basin and Province or State snow survey reports summarizing the results of the measurements and forecasts of seasonal runoff and water supply are issued by the Soil Conservation Service, U. S. Department of Agriculture and some of its cooperators; the Water Rights Branch of the British Columbia Department of Lands and Forests; and the California Division of Water Resources.

Copies of the various federal-state cooperative snow survey reports listed below may be secured by writing to:

Head, Water Supply Forecasting Section Soil Conservation Service 209 S. W. 5th Avenue Portland 4, Oregon

BASIN REPORTS:

S

P	SIN REPORTS:	
	Colorado, Rio Grande, and Platte-Arkansas River Basins	Issued monthly February through May by SCS and Colorado Experiment Station, Fort Collins, Colorado.*
	Columbia River Basin	Issued monthly January through May by Soil Conservation Service, Boise, Idaho.*
	Upper Missouri River Basin	Issued monthly February through May by SCS and Montana Agricultural Experiment Station, Bozeman, Montana.*
	West-Wide Water	Issued April 1 by Soil Conservation Service and
	Supply Outlook	Cooperators, Portland, Oregon.
Т	ATE REPORTS:	
	Arizona	Issued semi-monthly January 15 through April 1 by SCS and Salt River Valley Water Users Association, Phoenix Arizona.*

Alizona	and Salt River Valley Water Users Association, Phoenix, Arizona.*
Nevada	Issued monthly February through April by SCS and Nevada State Engineer, Reno, Nevada.*
Oregon	Issued monthly January through May by SCS, Portland, Oregon, and Oregon Agricultural Experiment Station.*
Utah	Issued monthly January through May by SCS, Salt Lake

City, Utah, and State Engineer of Utah and Utah Agricultural Experiment Station.*

Washington...... Issued monthly February through May by SCS, Spokane,
Washington, and State Department of Conservation and
Development.*

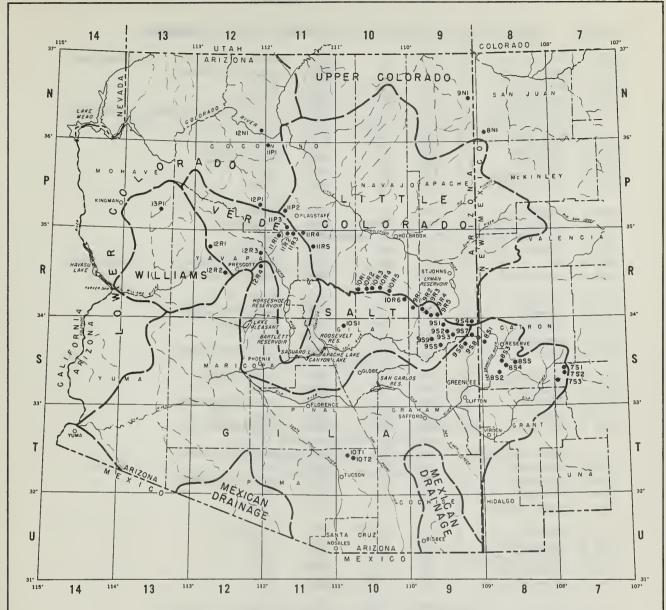
Wyoming...... Issued monthly February through May by SCS, Casper, Wyoming, and State Engineer of Wyoming.*

*Special reports are issued as needed.

The British Columbia reports are issued February 1 through June 1 and may be secured from Comptroller, Water Rights Branch, Department of Lands and Forests, Parliament Buildings, Victoria, B.C.

The California reports are issued monthly February 1 through May 1 and may be secured from Division of Water Resources, California Department of Public Works, Sacramento, California.

The annual water supply forecasts of the Weather Bureau are available in monthly bulletins published from January through May. These bulletins entitled, "Water Supply Forecasts for the Western United States" may be obtained from River Forecast Center, Weather Bureau, 712 Federal Office Building, Kansas City 6, Missouri.



LEGEND DRAINAGE BASIN BOUNDARY SNOW COURSE

ARIZONA COOPERATIVE SNOW SURVEYS

13U2 •

SNOW COURSES AND DRAINAGE BASINS
JANUARY 1956



INDEX TO SNOW COURSES

NUMBER *	NAME	SEC	TWP	RGE** EL	EVATION	RIVER BASIN	
9-S-1 10-T-1 9-S-6	Antelope Park Baldy (p) Bear Wallow Beaver Head Big Lake Knoll	29 28 6 13 2	19N 7N 12S 4N 5N	8E 27E 16E 30E 28E	7300 9000 8100 8000 8800	Verde Salt-Little Colorado Gila Salt-Frisco Salt-Frisco-Little Colorado	
12-N-1 12-R -1 10-R -3	Black Canyon Bright Angel Camp Wood Canyon Creek (s) Casner Park (s)	8 34 3 18 19	135 33N 16N 11N 18N	11W*** 3E 6W 15E 8E	6790 8400 5700 7500 6950	Gila Lower Colorado Williams–Verde Salt Verde	
8-S-3 9-S-9 9-S-7 10-R-2	Chalender (s) Corner Mountain Corn Creek (p) Lat. Coronado Trail Elk Forest Dale (s)	27 7 .33°45 26 31 2	22N 10S 'N. Long 5N 11N 9N	3E 17W*** .109 ^o 45'W. 30E 14E 21E	7100 8850 § 7730 8000 7600 6000	Verde Gila-Frisco Salt Salt-Frisco Salt-Little Colorado Salt-Little Colorado	Discontinued
9-R -5 8-S -1 12-R -4	Fort Valley Ft. Apache Frisco Divide Gaddes Canyon Gentry	22 18 31 11 36	22N 7N 6S 15N 11N	6E 27E 20W*** 2E 15E	7350 9160 8000 7600 7600	Verde # Salt-Little Colorado Frisco-Gila Verde # Salt-Little Colorado	
11-R -5 10-R -4 7-S -2	Grand Canyon Happy Jack Heber (p) Inman Iron Springs	30 28 6	30N 17N 11N 11S 14N	4E 9E 15E 10W***	7500 7630 7600 7800 6200	Lower Colorado Verde Salt–Little Colorado Gila Williams–Verde	
9-R -4 9-R -2 9-R -1	Maverick Fork (s)(p) McKay Peak McNary (s) Milk Ranch Mingus Mountain	13 14 28	6N 7N 8N 8N 15N	27E 24E 23E 23E 2E	9050 8250 7200 7000 7100	Salt-Little Colorado Salt	Not read
11-R-4 11-R-3 11-R-1	Mogollon Mormon Lake Mormon Mountain(s) Munds Park (s) N-Bar Lake	14 7	115 18N 18N 18N 18N	19W*** 8E 8E 7E 17W***	7000 7350 7500 6500 8600	Frisco-Gila Verde Verde Verde Gila	
9-5 -4 9-5 -5 9-N-1	Negrito Nutrioso Pacheta § Roof Butte Rose Canyon	23	10S 6N vn of Mav 8N 12S	16W*** 30E 'erick, Ariz. 6W**** 16E	8200 8500 7800 8500 7300	Gila Salt-Frisco-Little Colorado Salt Little Colorado # Gila	Not read
7-S -1 9-R -3 8-N-1	State Line Taylor Creek Trout Creek Washington Pass Lat Willow Ranch	5	6S 10S 7N I'N. Long 21N	21W*** 10W*** 24E .108°50'W. §	8000 7850 6400 8600 5000	Gila-Frisco Gila Salt Little Colorade Williams	Not read Not read
	Woods Canyon Workman Creek	15 33	11N 6N	13E 14E	7640 6900	Salt-Little Colorado Salt	Discontinued

^{*} Number indicates location of course within coordinate rectangle, thus 9-N 1 is Course *1 in coordinate rectangle 9-N.

^{**} All in Gila and Salt River Base and Meridian except where otherwise indicated.

^{***} New Mexico Principal Meridian.

^{****} Navajo Base.

^{*} On adjacent drainage.

⁽s) Soil Moisture Station installed on or in vicinity of course.

[§] Unsurveyed.

⁽p) Storage gage installed on or in vicinity of course

COOPERATIVE SNOW SURVEYS and WATER SUPPLY FORECASTS

for

ARIZONA

(Salt, Verde, Gila and part of Lower Colorado River Basin)

Issued

February 15, 1956

Report Prepared

bу

W. E. Anderson, Snow Survey Supervisor Soil Conservation Service 39 North Sixth Avenue Phoenix, Arizona

Issued by

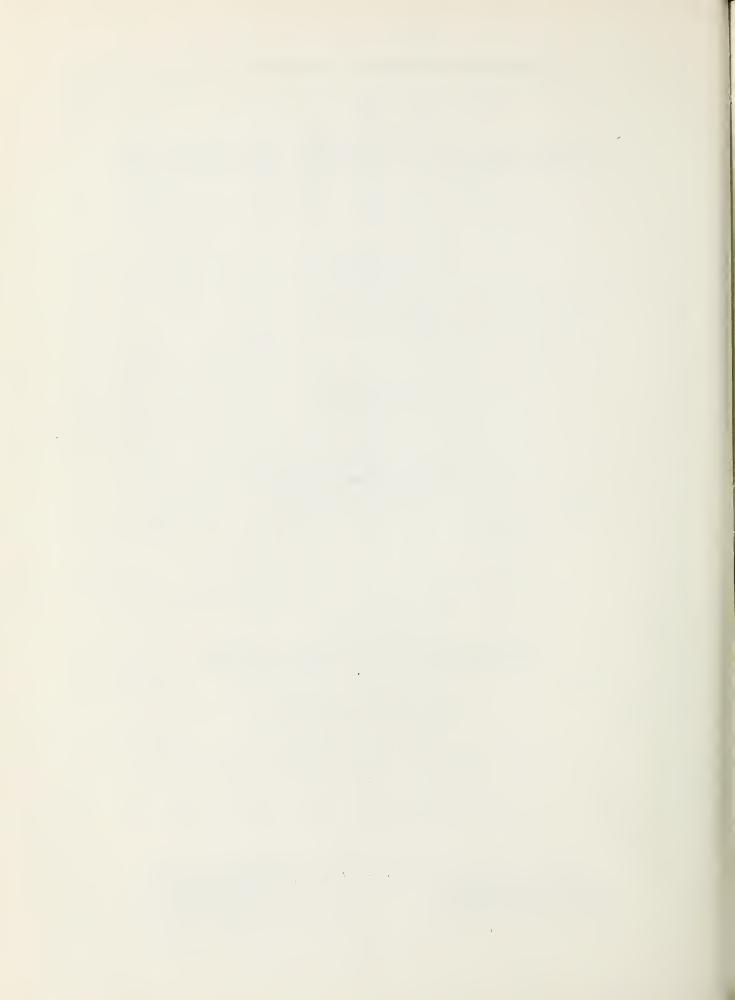
Salt River Valley Water Users! Association

and

Soil Conservation Service

Robert V. Boyle
State Conservationist
Soil Conservation Service

Victor I. Corbell
President
Salt River Valley Water Users! Assn.



ARIZONA WATER SUPPLY OUTLOOK

February 15, 1956

GENERAL

The recent series of storms have added very large amounts of snow on some of the watersheds, but some areas still remain substantially below normal for this season of the year.

Due to an equipment breakdown, most high elevation courses were not measured at this time. Therefore, the tabulation of summarized conditions given elsewhere in this report may not truly reflect average conditions on the snow-covered portions of the watersheds. However, the averages given and the snow cover reported on those individual courses that were read are indicative of the considerable improvement that has occurred.

Most of the snow is now very sticky, with densities ranging around 25%. This is a much better condition than existed up until recently, and it can now be expected that, if weather conditions continue favorable, the snow which has accumulated will largely remain until thawing conditions occur.

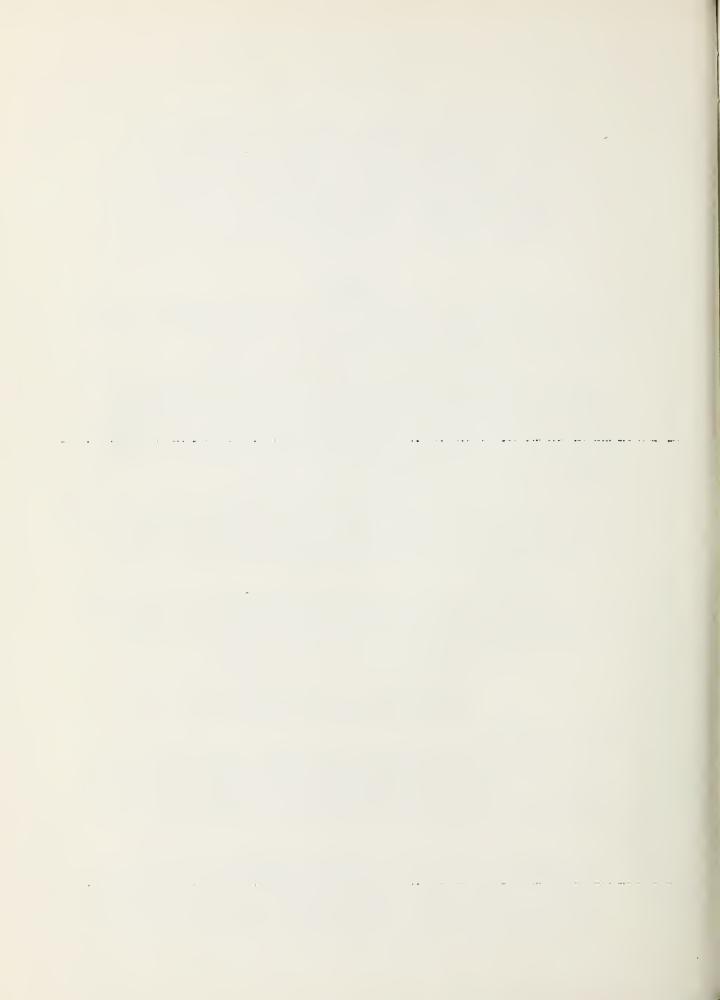
Many observers have commented that soils are very wet and will absorb less of the snow stored water than they have for the last few years. This will result in a higher runoff factor for a given amount of snow water and is a definitely favorable condition.

SHOW COVER AND WATERSHED CONDITIONS

Verde River Basin

Low elevations are generally bare and dry. Snow courses at the higher elevations were not measured due to engine trouble on the snow cat. Courses at the intermediate elevations reflect a water content but little above that of last year and only about 25% of the 1938-52 average.

Soil moisture conditions on this watershed are very good at elevations above the rim. At lower elevations they range from dry to moist. With no low snow, conditions at these lower elevations will not affect runoff. The wet soils at the higher elevations will promote runoff and are an important factor in evaluating the prospective water supply in this basin.



Stream flow in the Verde has been holding steady at about 250 c.f.s. Reservoir storage is approximately 82,500 acre feet, 120% of the 15-year average at this time, but only 25% of capacity and compares with approximately 61,000 acre feet at this time last year. Lake Mary is at a very low stage and considerable increase in the amount of snow will be necessary before this lake can expect to make important gains in storage.

Salt and Tonto River Basins

The most important gains in the snow pack that have occurred this winter have been on this basin. While there is no data available concerning the conditions at the higher elevations along the rim and in the White Mountains, snow courses at the lower elevations show a water content of approximately 190% of the 1938-52 normal, and 170% of last year. These low elevations contribute less water proportionally than do the higher areas, but the above-normal snow pack at the lower courses probably somewhat reflects conditions that exist at the higher elevations. Here, also, the snow is reported as sticky and with densities ranging up to 30%, indicating a favorable condition for retention of the pack if weather conditions remain favorable.

Soil moisture is very good on the upper portion of this basin, and a high yield can be expected from the snow pack. Stream flows have been gradually increasing throughout the fall, reflecting the improved soil moisture conditions and increased base flows due to last summer's storms.

Reservoir storage stands at approximately 587,000 acre feet, 89% of the 15-year average and 33% of capacity. This compares with approximately 823,000 acre feet last year on this date.

Little Colorado River Basin

Only limited surveys were made of courses in this basin, and there is a considerable lack of detailed comparative information at this time. Those courses reporting show a snow stored water content of 138% of the 15-year average, but represent only a small part of the snow covered areas in the basin and hence may not give a true picture of average conditions.

Soil moisture conditions are very good at high and intermediate elevations and indicate very favorable conditions for continued runoff. Forecasted runoff is based on deficient information, and the quantities may be revised sharply when additional data becomes available. January stream flow was deficient, but recent thaws at lower elevations have contributed to slightly better conditions locally.

Lyman Dam holds 8,200 acre feet, about 26% of capacity and more than four times its storage at this time last year. Runoff into this reservoir is now estimated at approximately 4,000 acre feet, or 44% of the 1938-52 average. Show Low Lake holds only about 100 acre feet of usable water, though the total storage amounts



to approximately 1,200 acre feet. The lake level is below the pump intakes, and there has been no increase in storage in recent weeks. Present conditions indicate that the reservoir will gain a substantially greater volume of snow water than was the case last year. No volumetric forecasts are prepared for this reservoir at the present time.

Gila and Frisco River Basin

Snow cover on the upper portions of this basin has been improving constantly, especially on the Frisco. While detailed reports have not been received from all locations, the average snow water reported is 143% of the 15-year average and more than twice last year at this time. However, an analysis of the reports received to date indicates that runoff to be expected from present snow pack would amount to only about 40% of the 1938-52 average and that continued stormy weather will be required before much improvement can be expected.

Late fall storms provided moisture to prime the soils and improve prospective runoff conditions. Grazing conditions can also be expected to benefit from the good soil moisture.

Storage in San Carlos Reservoir is more than twice that of last year at this time, but still only 44% of the 15-year average.

Other Basins

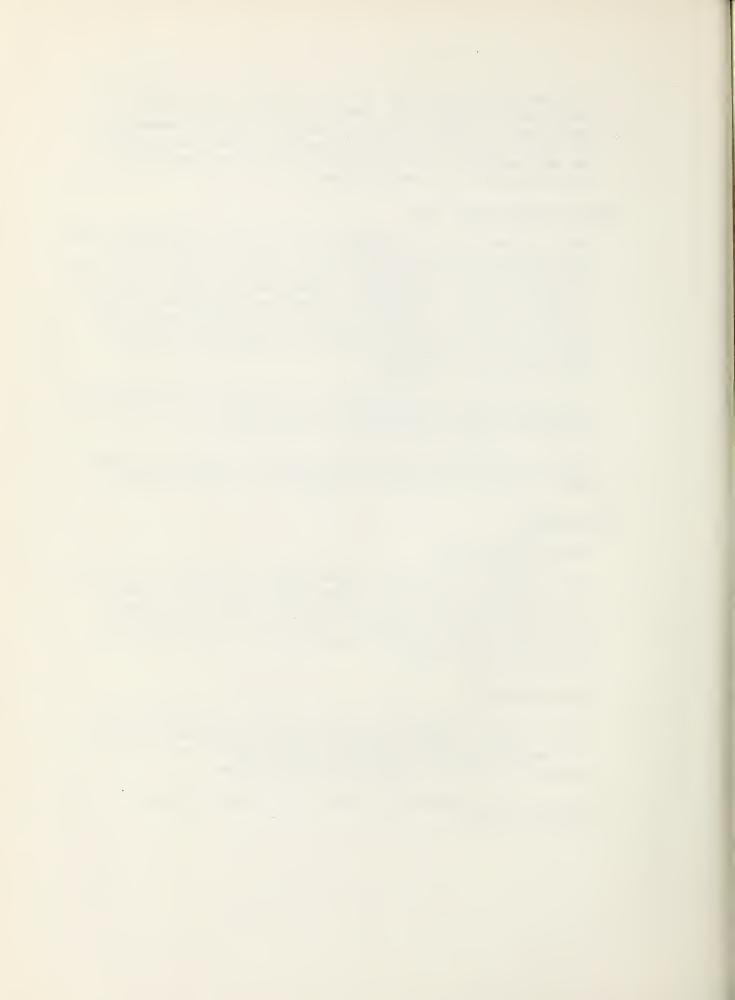
Bill Williams River

There is only spotted snow at the higher elevations on this basin. Soil moisture conditions are greatly improved, and it appears possible that spring grasses may receive considerable benefit from this. Some minor gains in stock tank storage have been reported, but there has been only minor local runoff from the melting of recent snows.

Agua Fria River

There is very little snow on this watershed, principally small areas at high elevations and in protected locations. Soil moisture is generally high and considerable range benefit can be expected, especially in areas of spring growing grasses.

Storage in Lake Pleasant is 130% of the 1938-52 average but only 20% of capacity.



STREAM FLOW FORECASTS - FEBRUARY 15, 1956

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature during the forecast period will be near average. Appreciable deviations from normal of temperature and/or precipitation during the forecast period will correspondingly modify these forecasts.

	SEASONAL STREAM FLOW IN THOUSANDS OF ACRE FEET FORECAST PERIOD FEBRUARY - MAY, INCLUSIVE								
BASIN, STREAM AND STATION	Forecast Runoff	Percent 15-Year	5-Year Measured Runoff						
	1956	Average	1955 	1954	1953	1938-52			
Salt River at Intake	, 165.	50	46.0	224.2	140.3	327.1			
Tonto River above Roosevelt	20.	47	3.6	30.3	26.8	42.6			
Verde River above Horseshoe	60.	27	56.3	178.0	53.3	222.0			
Gila River at Virden	24.	40	10.7	24.3	26.0	59 .9			
Frisco River at Clifton	20.	39	9.0	30.1	16.5	51.7			
Little Colorado River above Lyman Dam 1/2/	4.	44	0.3	1.7	2.1	9.1			

^{1/} Average is for less than 15 years in the 1938-52 period.

^{2/} Forecast period for Little Colorado River above Lyman Dam is for February-June, inclusive.



SUMMARY OF FEBRUARY 15 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHED

	No. of Courses	Snow Depth 1956 Inches	Sr	now Wat	er Con Inches	Snow Density		Water nt in	
WATERSHEDS	in Average		1956	1955	1954	1938-52 Average	1956 Percent		nt of Averago
Gila River	8	13.2	3.0	1.4	0.3	2.1	23	214	143
Salt River	8	17.1	4.4	2.6	0.8	2.3	26	169	191
Verde River	5	2.2	0.4	2.1	1.2	1.6	18	19	25
Williams River	3	0.7	0.0	0.7	0.1	1.3			
Lower Colorado River	4	10.5	2.5	3.8	2.8	5.1	24	66	49
Little Colorado River		12.0	3.3	2.1	1.2	2.4	28	157	138



				SMOW	COVER	MEASUR	EMENTS		
				1956			PAS	T RECORD	
			Date		Water				Pre-
DRAINAGE BASIN			of	Snow	Con-	Water	Conte	nt (In.)	vious
and				Depth				1938-52	Yrs. of
SNOW COURSE	No •	Elev.	vey	(In.)	(In.)	1955	1954	Average	Record
CTI A DTITU								2/	
GILA RIVER Nutrioso	9-S-4	0.500	2/14	12.0	7 0	1 7	0.3	ם ב	3.6
Bear Wallow 3/	10-T-1	8500 8100	$\frac{2}{15}$	16.0	3.0 3.4	1.7 4.8	0.2 1.9	2.5 2.5	16 8
Frisco Divide	8-S-1	8000	$\frac{2}{14}$	14.0	3 _* 5	1.8	0.4	2.0	16
State Line	9-S-8	8000	2/14	18.0	4.1	2.1	0.4	2.9	16
Coronado Trail	9 - S-7	8000	2/14	16.0	4.0	2.5	0.2	3.9	16
Beaver Head	9 - S - 6	8000	2/15	21.0	4.5	2.9	0.3	3.4	16
Taylor Creek	7-S-1	7850	2/15	6.0	0.6	0.0	0.0	0.8	14
Inman	7-S-2	7800	2/15	5.0	0.5	0.0	0,0	1.0	10
Rose Canyon 3/	10-T-2		2/15	9.0	2.3	2.4	0.7	1.3	8
Mogollon	8-S-2	7000	2/14	14.0	3.6	0,0	0.8		3
Black Canyon 3/	7-8-3	6790	Repor	rt Dela	ayed	0.0	0.4	-	3
0.170 3.77									
SALT RIVER	0 70 6	0760	77_ C'.			4 =	F 7	0.5	C
Ft. Apache 1/3/	9-R-5 9-S-1	9160 9125		irvey irvey		$4.5 \\ 4.3$	5.3 4.9	6.5	6 6
Baldy 1/3/ Maverick Fork 3/	9-S-2	9020		irvey		5.0	5.0	6.6 8.7	6
Nutrioso	9-S-4	8500		12.0	3.0	1.7	0.2	2.5	16
Coronado Trail	9-S-7	8000		16.0	4.0	2.5	0.2	3.9	16
Beaver Head	9-S-6	8000		21.0	4.5	2.9	0.3	3.4	16
Pacheta	9-S-5	7800	2/14	26.0	6.0	2.5	0.5	2.1	6
Gentry 3/	10-R-5	7600	No St			3.1	2.0	3.0	6
Heber 3/	10-R-4	7600	No Si			3.4	1.8	2.9	6
Canyon Creek 3/	10-R-3	7500	No Su			3.9	2.2	4.1	6
McNary	9-R-2	7200		19.0	5.5	2.4	2.9	2.6	16
Milk Ranch	9-R-1	7000	2/14	16.0	4.3	2.0	0.0	1.5	15
Workman Creek	10 - S-1	6900	2/14	15.0	3.8	4.9	2.4	1.2	4
Forest Dale	10-R-6	6430	2/14	12.0	3.7	2.0	0.0	1.0	16
VERDE RIVER	77 5 5	5.050	T.			0.7			
Happy Jack 3/	11 - R-5			t Dela		2.1	_	3 _• 6	5
Gaddes Canyon 3/	12-R-4	7600 7500	2/13		3.3	4.4	2.6	-	2
Mormon Mountain 3/	11-R-3 11-R-4			rvey		5.0 5.4		5.2	6 9
Mormon Lake 1/3/ Fort Valley 1/	11-R-4 11-P-2		2/14		1.1	2.3	1.8	6•9 3•6	9
Mingus Mountain	12-R-3	7100		T	T	1.8	1.2	2.0	9
Chalender	12-R-3	7100	$\frac{2}{14}$		0.7	4.4	2.6	4.1	9
Casner Park 3/	11-R-2	6930		rvey		5.0	2.3	3.8	6
Munds Park 3	11-R-1			rvey		4.1	2.4	0.0	6
Iron Springs 1/	12-R-2	6200	2/14	2.0	T	0.8	0.0	1.9	10
Camp Wood	12-R-1	5 7 00	2/15	0.0	0.0	1.2	0.3	1.3	10
1			/ =0		•		•••		

On adjacent drainage.
All averages are for less than 15 years of record in the 1938-52 period.
Not included in watershed average.



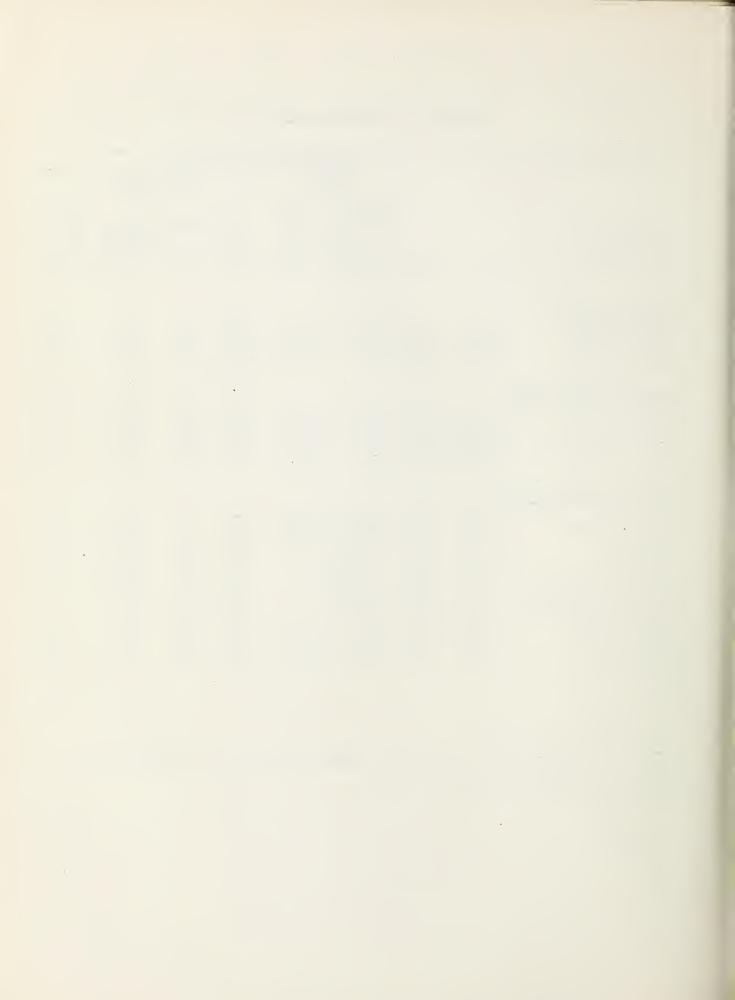
ARIZONA SNOW SURVEYS - FEBRUARY 15, 1956

				SNOW	COVER	MEASUR	EHENTS		
				1956			PAST	RECORD	
DRAINAGE BASIN			Date	Snow Depth	Water Con-	Water	Conte	nt (In.)	Pre- vious Yrs. o
SNOW COURSE	No.	Elev.			(In.)	1955	1954	Average.	
						· · · · · · · · · · · · · · · · · · ·		2/	
WILLIAMS RIVER									
Iron Springs	12-R-2	6200	2/14	2.0	T	0.8	0.0	1.9	10
Camp Wood 1/	12-R-1	5700	2/15	0.0	0.0	1.2	0.3	1.3	10
Willow Ranch	13-P-1	5000	2/15	0.0	0.0	0.0	0.0	0.8	10
LOWER COLORADO RIVER									
Bright Angel	12-N-1	8400	2/14	26.0	6.4	4.9	4.4	9.1	9
Grand Canyon	11-P-1	7500	2/14	7.0	1.6	2.9	1.5	3.5	8
Fort Valley	11-P-2	7 350	2/14	5.0	1.1	2.3	1.8	3.6	9
Chalender 1/	12-P-1	7100	2/14	4.0	0.7	4.4	2.6	4.1	9
LITTLE COLORADO RIV	ER								
Nutrioso ,	9-S-4	8500	2/14	12.0	3.0	1.7	0.2	2.5	16
Happy Jack 3/	11 ⊶ R⊷5	7630			ayed	2.1	-	3.6	5
Gentry 3/	10-R-5	7600	No St	ırvey		3.1	2.0	3.0	6
Heber 3/	10-R-4	7600	No St	ırvoy		3.4	1.8	2.9	6
Canyon Creek 3/	10-R-3	7 500		ırvey		3.9	2.2	4.1	6
Mormon Mountain 3/		7 500		ırvey		5.0	3.8		6
Mormon Lake 3/	11-R-4	7350		ırvey		5.4		6.9	9
Fort Valley	11-P-2	7350	2/14		1.1	2.3		3.6	9
McNary	9-R-2	7200	2/14		5.5	2.4	2.9	2.6	16
Forest Dale	10-R-6	6430	2/14	12.0	3.7	2.0	0.0	1.0	16

^{1/} On adjacent drainage.

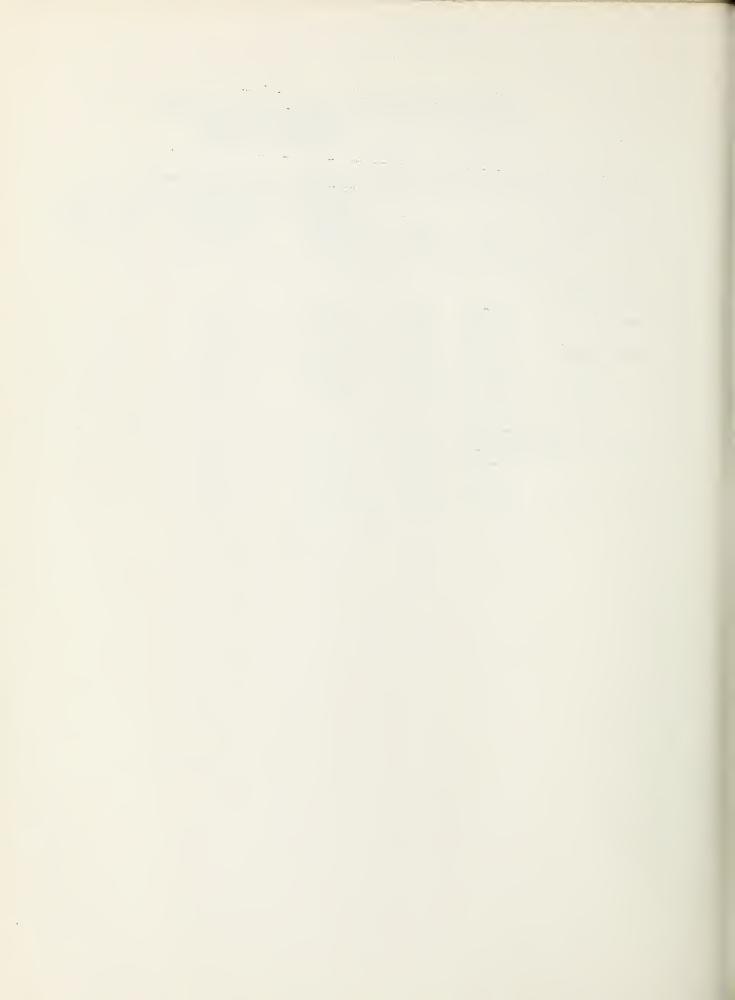
^{2/} All averages are for less than 15 years of record in the 1938-52 period.

^{3/} Not included in watershed average.



ARIZONA SNOW SURVEYS - DELAYED REPORTS RECEIVED SINCE LAST BULLETIN (FEBRUARY 1, 1956)

									
DRAINAGE BASIN	I		SNOW COVER MEASUREMENTS - 1956						
and			Date of	Snow Depth	Water Content				
SNOW COURSE	No •	Elev.	Survey	(Inches)	(Inches)				
SALT RIVER									
									
McNary	9-R-2	7200	2/2/56	21.3	3.2				
Milk Ranch	9 - R-1	7000	2/3/56	19.4	3.5				
THE THOUSANT	2-11-1	7000	2/3/30	T2 • #	3,5				
Forest Dale	10-R-6	6430	2/2/56	14.0	2.1				
LITTLE COLORAD	ORIVER								
McNary	9-R-2	7200	2/2/56	21.3	77 0				
Indivat y	J =1(=2	1200	2/2/50	Σ Τ .ΦΟ	3.2				
Forest Dale	10-R-6	6430	2/2/56	14.0	2.1				
			, ,		•				



STATUS OF RESERVOIR STORAGE - FEBRUARY 15, 1956

			USABLE	STORAGE -	1000 ACRE	FEET
BASIN and STREAM	RES ERVO IR	USABLE CAPACITY 1000s AF	1956	1955	1954	15-Year Average 1938-52
Agua Fria	Lake Pleasant 1/	163.8	28.5	23.3	33.0	21.9
Colorado	Lake Havasu 1/	688.0	603.0	602.0	609.9	555•6
Colorado	Lake Mohave $1/$	1,810.0	1,681.0	1,700.0	1,664.0	1,065.5
Colorado	Lake Mead	27,207.0	11,129.0	12,063.0	16,323.0	19,131.0
Gila	San Carlos	1,205.0	77.0	37.0	0.4	175.9
∀erde	Bartlett 1/	180.0	80.0	59.0	42.0	55.0
Verde	Horseshoe $1/$	143.0	2.4	2.0	5.0	14.1
Salt	Roosevelt	1,381.6	221.0	494.0	586.0	420 . 7
Salt	Apa c he	245.1	242.0	231.0	244.0	185.5
Salt	Canyon	57.8	57.0	44.0	57.0	34.0
Salt	Saguaro	69 •8	67.0	54.0	49.0	23.1
Little Colorado	Lyman 1/	30 _° 6	8.2	1.8	0.8	8.1
Little Colorado	Show Low Lake 1/	<u>2</u> / 5.1	0.1	0.2	0.1	

January 15, 1956 - Storage reported 1.2

Correct to 0.1

February 1, 1956 - Storage reported 1.2

Correct to 0.1

Reported quantities were total storage not corrected for dead storage of 1,070 acre feet below sill of outlet gates. Corrected figures given above represent usable storage.

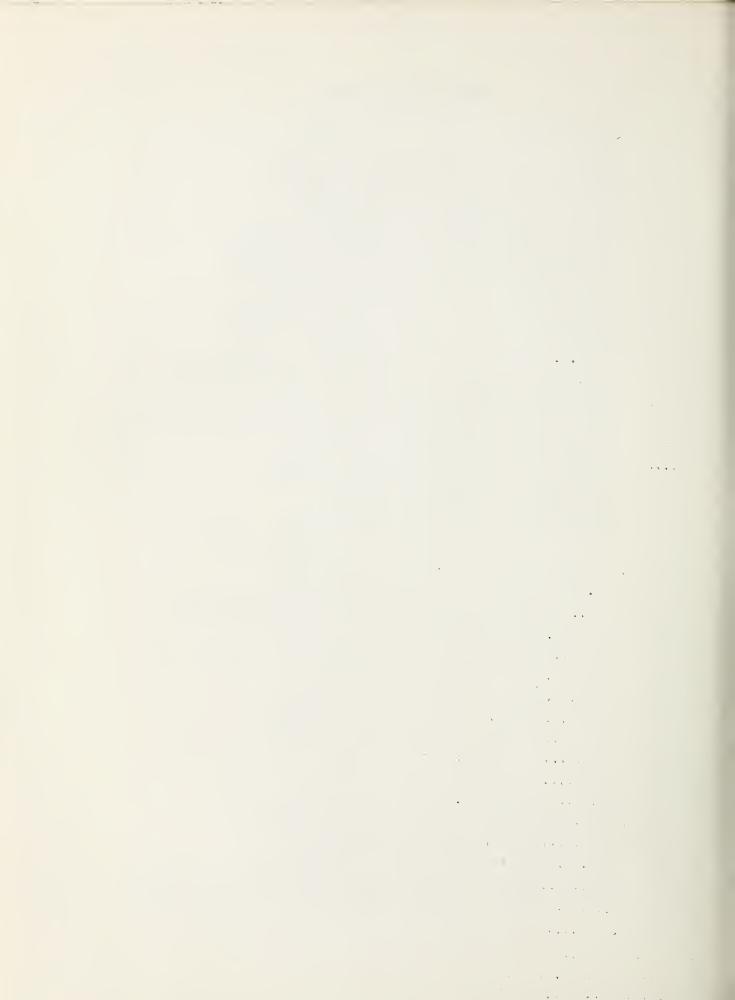
^{1/} Average is for less than 15 years of record in the 1938-52 period.

^{2/} Correction of Show Low Lake figures previously reported should be made as follows:



LIST OF SMOW SURVEYORS

SNOW COURSE	SURVEYOR
Baldy	SCS and SRVV/U
Bear Wallow	J. R. Brinkley
Beaver Head	Jess Burke
Black Canyon	Robert M. White
Bright Angel	Hillis and Hillis
Camp Wood	Mrs. C. C. Merritt
Canyon Creek	SCS and SRVWU
Casner Park	SCS and SRVWU
Chalender	Oleson and Gossard
Coronado Trail	Nc Ad ams
Forest Dale	Robinson, Karty and Bread
Ft. Apache	SCS and SRVWU
Fort Valley	Rocky Mt. F. & R. Exp. Station
Frisco Divide	Weissenborn
Gaddes Canyon	Richard Enz
Gentry	SCS and SRVWU
Grand Canyon	Lynch
Happy Jack	Emil Ryberg
Heber	SCS and SRVWU
Inman	C. H. McCauley
Iron Springs	Ernest Saxby
McNary	Robinson, Karty and Bread
Maverick Fork	SCS and SRVWU
Milk Ranch	Robinson, Karty and Bread
Mingus Mountain	Richard Enz
Mogollon	J. R. Wray
Mormon Lake	SCS and SRVWU
Mormon Mountain	SCS and SRVWU
Munds Park	SCS and SRVWU
Nutrioso	McAdams
Pacheta	Foch Phillips
Rose Canyon	J. R. Brinkley
State Line	Weissenborn
Taylor Creek	C. H. McCauley
Willow Ranch	Tiny Miller and LeRoy Tingstrom
Workman Creek	Rocky Mt. F. & R. Exp. Station



The following organizations cooperate in the Arizona snow survey work:

FEDERAL

Department of Agriculture

Soil Conservation Service

Forest Service
Apache Forest
Coconino Forest
Coronado Forest
Gila Forest
Kaibab Forest
Prescott Forest
Rocky Mountain Forest and Range Experiment Station

Department of Commerce
Weather Bureau
Arizona Section

Department of Interior

Bureau of Reclamation Region III

Geological Survey
Arizona District

Bureau of Indian Affairs Fort Apache Reservation

National Park Service Grand Canyon National Park

Gila Water Commissioner, Safford, Arizona

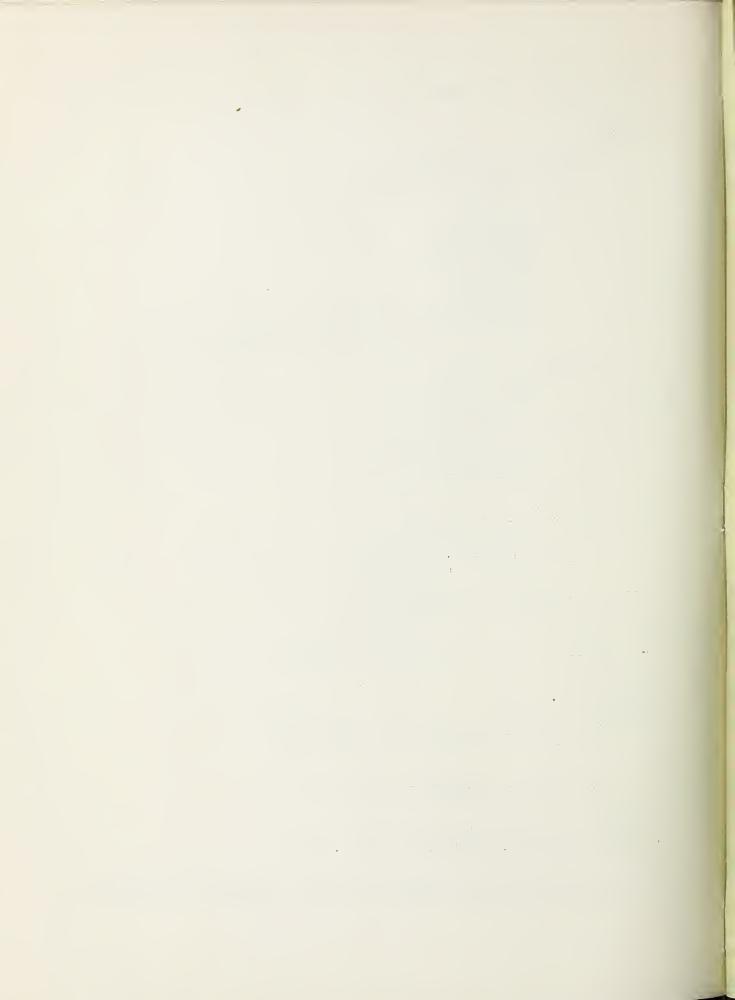
IRRIGATION PROJECTS

Salt River Valley Water Users' Association Phoenix, Arizona

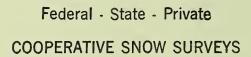
San Carlos Irrigation and Drainage District Coolidge, Arizona

SOUTHWEST LUMBER MILLS, INC., McNary, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.







Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"